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# LAPTH - Laboratoire d'Annecy-le-Vieux de physique théorique

Rapport Hcéres

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# HCERES

High Council for the Evaluation of Research  
and Higher Education

Research units

HCERES report on research unit:

Laboratoire d'Annecy-le-Vieux de Physique Théorique

LAPTh

Under the supervision of  
the following institutions  
and research bodies:

Université Savoie Mont Blanc

Centre National de la Recherche Scientifique – CNRS

# HCERES

High Council for the Evaluation of Research  
and Higher Education

Research units

*In the name of HCERES,<sup>1</sup>*

Didier HOUSSIN, president

*In the name of the experts committee,<sup>2</sup>*

Jean ORLOFF, chairman of the committee

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Under the decree No.2014-1365 dated 14 november 2014,

<sup>1</sup> The president of HCERES "countersigns the evaluation reports set up by the experts committees and signed by their chairman." (Article 8, paragraph 5)

<sup>2</sup> The evaluation reports "are signed by the chairman of the expert committee". (Article 11, paragraph 2)

# Evaluation report

This report is the result of the evaluation by the experts committee, the composition of which is specified below. The assessments contained herein are the expression of an independent and collegial deliberation of the committee.

Unit name:	Laboratoire d'Annecy-le-Vieux de Physique Théorique
Unit acronym:	LAPTh
Label requested:	UMR 5108
Present no.:	199111793M / UMR 5108
Name of Director (2014-2015):	Mr Fawzi BOUDJEMA
Name of Project Leader (2016-2020):	Mr Luc FRAPPAT

## Expert committee members

Chair:	Mr Jean ORLOFF, Université de Clermont-Ferrand (representative of the CNU)
Experts:	Mr Niklas BEISERT, ETH Zurich, Switzerland
	Mr Nicolao FORNENGO, University of Torino, Italy
	Mr Gregory SOYEZ, CNRS, CEA Saclay (representative of the CoNRS)

### Scientific delegate representing the HCERES:

Mr Marc KNECHT

### Representative(s) of the unit's supervising institutions and bodies:

Mrs Karine ARGENTO, CNRS

Mr Johann COLLOT (Director of Doctoral School n° 47)

Mr Roman KOSSAKOWSKI, Université de Savoie

Mr Bart VAN TIGGELEN, Institut de Physique of CNRS

## 1 • Introduction

### History and geographical location of the unit

From a theory team inside the High-Energy experimental laboratory LAPP created in 1976 close to CERN, the group successfully developed into a joint laboratory with ENS Lyon (ENSLAPP, 1991), before developing into the current independent Unité Mixte de Recherche (LAPTh, 1999), depending both on CNRS and Université de Savoie (UdS). In the process, despite relatively large distances (Chambéry or CERN: 50km, Grenoble: 130km, Lyon: 150km), LAPTh has built and kept strong scientific relations with theorists at CERN and Lyon, with high-energy experimentalists of both neighbouring LAPP and CERN, while assuming strong teaching roles in Chambéry, Lyon and Grenoble.

The last five years period has been marked by an increasing partnership with Grenoble, first through affiliation to the Grenoble Doctoral School for Physics, then through joint scientific projects, which led to the successful Labex project ENIGMASS. This proactive strategy intelligently anticipated the ministry request for associating all Grenoble and Chambéry universities inside a single structure "COMUE Université de Grenoble - Alpes" (UGA), encouraged by an Initiative D'EXcellence (IDEX) call for which a project is currently under construction.

### Management team

The management team consists of a Director, a Deputy Director, and the Head of Administration. It is regularly (4-5 times/year) advised by the *Laboratory Council* containing all members of the unit, including the non-permanent ones, which have been present for at least one year, and following carefully thought Rules of Procedures. A scientific *Advisory Board* consisting of the director, the team leaders and one internationally recognized scientist per team has further been created. It can be consulted anytime between its regular meetings every other year during the lab retreat. The director and two team leaders will change for the next five-year period.

### HCERES nomenclature

ST2-Physique

### Unit workforce

Unit workforce	Number as at 30/06/2014	Number as at 01/01/2016
<b>N1:</b> Permanent professors and similar positions	7	7
<b>N2:</b> Permanent researchers from Institutions and similar positions	12	11
<b>N3:</b> Other permanent staff (without research duties)	5 [4.4]	5 [4.4]
<b>N4:</b> Other professors (Emeritus Professor, on-contract Professor, etc.)		
<b>N5:</b> Other researchers from Institutions (Emeritus Research Director, Postdoctoral students, visitors, etc.)	7	6
<b>N6:</b> Other contractual staff (without research duties)		
<b>TOTAL N1 to N6</b>	<b>31</b>	<b>29</b>

Unit workforce	Number as at 30/06/2014	Number as at 01/01/2016
Doctoral students	6	
Theses defended	17	
Postdoctoral students having spent at least 12 months in the unit	9	
Number of Research Supervisor Qualifications (HDR) taken	5	
Qualified research supervisors (with an HDR) or similar positions	17	16

## 2 • Overall assessment of the unit

### Global assessment of the unit

Despite a relatively small size, LAPTh has undoubtedly become one of the best laboratories for Theoretical Physics in France. Its important scientific production is regular and well-balanced between the three teams, each earning a solid worldwide reputation in particle physics, astro-particle and cosmology, or mathematical physics. This recognition has significantly progressed since the last evaluation, and helped reinforcing a rich network of collaborations, projects, workshops and conferences at the French, European and world-wide level, without dropping the fruitful relations with neighbouring LAPP and “local” CERN.

The dynamical and successful policy for grant applications has allowed to host an unusually large number of high quality PhD students, post-docs and visitors. A very good atmosphere helps the fast integration of these newcomers, and stimulates exchanges, also between permanent members. Competent administrative staff further contributes to the quality of life at LAPTh.

### Strengths and opportunities in relation to the context

The unit possesses strong and often leading expertise in each team, with good synergies between them.

The particle and astro-particle teams are very well prepared for the phenomenological exploitation of coming experimental data.

The unit enjoys an excellent international visibility and well-thought regional connections with LAPP, CERN, Lyon and Grenoble, the latter being boosted by the Labex ENIGMASS success.

The Université Grenoble-Alpes and IDEX projects with Grenoble constitute excellent opportunities to build upon this success.

### Weaknesses and threats related to the context

The strategy mismatch between Université de Savoie and CNRS, both of which LAPTh is depending on, is a major source of uncertainty for the future positioning and development of the unit in the regional high-education and research landscape.

The retirement of one quarter of its permanent members over the next ten years, combined with the long-term leaves and subsequent departures of excellent (and thus mobile) elements, may strongly weaken the unit if not balanced by hirings.

It is difficult to invest in a “natural”, i.e. local and steady, source of good students.

## Recommendations

LAPTh is encouraged to keep and cherish its lively atmosphere and visitor program, and to consolidate its strong scientific connections with CERN, LAPP, as well as with LPSC in Grenoble. The ending of the Labex ENIGMASS must therefore be anticipated to prepare the following period.

The committee fully supports the view that the UGA and IDEX projects are strategic opportunities in which LAPTh has advantages that it should exploit.

Concerning the important issue of long term leaves by CNRS staff raised in the report, the committee has little help to offer other than insisting this is definitely a problem for CNRS to cope seriously with, and keep in mind at times where hirings are too scarce to naturally offer a source of compensation. To the unit, there can be no other recommendation than to continue supporting the best possible candidates, even if those may be more likely to obtain leaves or higher positions elsewhere. Another policy would not have brought LAPTh so far.

As maintaining the research potential of the unit requires about five hirings in the next period, every effort should be made to recruit at least three permanent staff members, most urgently one on particle cosmology and one on the interface between integrable systems and quantum field theory.